

REPORT TO CONGRESS:

REPORT ON NATIONAL SPACEPORTS POLICY

**Federal Aviation Administration Reauthorization Act of 2018
(Public Law 115-254), Section 580**

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1. Executive Summary

Section 580 of the Federal Aviation Administration (FAA) Reauthorization Act of 2018 (FAARA), Public Law 115-254, requires the Secretary of Transportation to submit a report to Congress on a National Spaceports Policy. In response to Section 580, this report provides an overview of the types of spaceports that exist, the launch and reentry statistics for commercial space transportation operations, and an overview of international efforts and Federal Government investments at spaceports.

The major findings of the report are:

- Most (92%) of commercial space transportation launches in the past three fiscal years have been vertical launches.
- Nine (64%) of the 14 FAA-licensed spaceports are licensed for horizontal launches and five (36%) are licensed for vertical launch.
- Of the five sites that are licensed for vertical launch only three are located off federal ranges, and only two of those three (14%) can host a launch at this time.
- Almost two-thirds (62%) of all U.S.-based launches occurred at federal ranges on average in the past three fiscal years. The rest occurred at either FAA-licensed spaceports (21%), or exclusive use launch sites (16%).
- The high percentage of commercial launches occurring from federal ranges can be attributed to two things: (1) the significantly limited number of off-federal range vertical launch sites and (2) existing government infrastructure and services available for commercial use on federal range launch sites at “direct cost” per Title 51 section 50913 (“direct costs” are significantly cheaper than the rates commercial sites are typically able to offer)
- International FAA-licensed operations have held steady at about six to seven operations per year for the past three fiscal years.
- Internationally, governments continually upgrade existing launch sites to accommodate current and new launch vehicles for government missions and adapt to accommodate commercial missions.
- Several countries are developing entirely new spaceports or upgrading existing suborbital sites to orbital capabilities through substantial governmental investment while simultaneously developing new legislation and regulations to attract commercial domestic, U.S., and international small-launch providers.

2. Introduction

In Section 580 of the FAARA, Congress directed the preparation of a report on National Spaceports Policy:

“REPORT.—Not later than 1 year after the date of enactment of this Act (10/5/2018), the Secretary of Transportation shall submit to Congress a report that—

“(A) evaluates the Federal Government’s national security and civil space transportation demands and the needs of the United States and international commercial markets;

“(B) proposes policies and programs designed to ensure a robust and resilient orbital and suborbital spaceport infrastructure to serve and capitalize on these space transportation opportunities;

“(C) reviews the development and investments made by international competitors in foreign spaceports, to the extent practicable;

“(D) makes recommendations on how the Federal Government can support, encourage, promote, and facilitate greater investments in infrastructure at spaceports; and

“(E) considers and makes recommendations about how spaceports can fully support and enable the national space policy.”

For this report, the discussion of spaceports includes:

- FAA-licensed spaceports: These are spaceports that have received either a Launch Site Operator License (14 CFR Part 420), or a Reentry Site Operator License (14 CFR Part 433)
- Exclusive use sites: When launches or reentries are conducted from or to a site exclusive to the launch or reentry operator’s own use, as determined by the FAA, no site license is required because 14 CFR Part 450¹ addresses all necessary requirements.
- Federal range: A federal range is a launch and/or reentry site operated by the federal government, and does not require a site license by the FAA. Federal launch ranges, such as the Eastern Range at Cape Canaveral Space Force Station (CCSFS) or the Western Range at Vandenberg Space Force Base (VSFB) host a significant number of licensed commercial launch operations and spaceports. Therefore, these ranges are included in this report even though they fall outside the definition of “spaceports” described above.

This report addresses the locations and activities of the above spaceports, the Office of Spaceports and its accomplishments, international spaceports and investments, and the history of federal spaceport investment including the Space Transport Infrastructure Matching (STIM) grant program. As this report focuses mostly on FAA-licensed commercial space operations, Congress may wish to consider a more qualified evaluator for its requested information on intergovernmental infrastructure and policy issues.

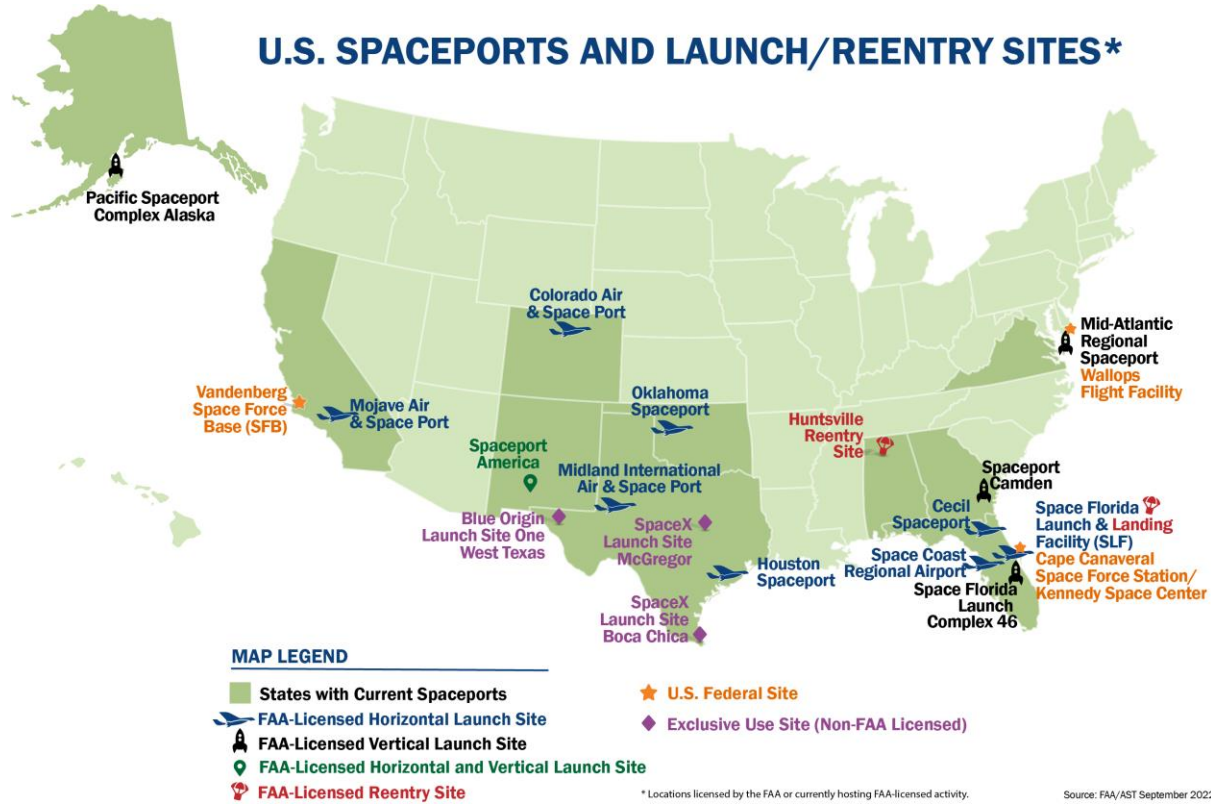
¹ For operations that were licensed or began the licensing process before the publication of Part 450 in December of 2020 14 CFR Parts 415, 417, 431 and 435 address all necessary requirements.

3. Spaceports and Operations

Current Status

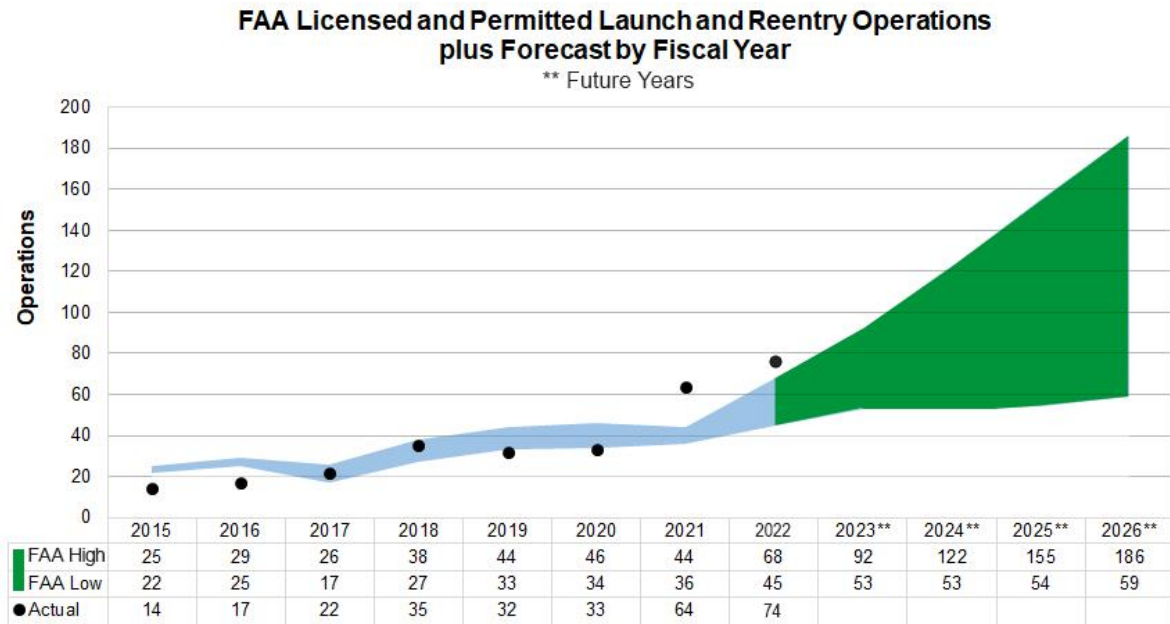
Locations of existing spaceports are depicted in [Figure 1](#). Appendix A contains a table of all U.S. launch and reentry sites.

Figure 1. FAA Licensed Spaceports and Launch and Reentry Sites



Since Fiscal Year (FY) 2019, there has been a significant increase in activity, with 74 licensed operations in FY22 ([Figure 2](#)). Based on announced plans for the launch of several large constellations of satellites and the existence of a number of launch vehicle development programs, the level of activity is likely to continue to grow for the foreseeable future.

Figure 2. History and Forecast of FAA Licensed and Permitted Operations by Fiscal Year



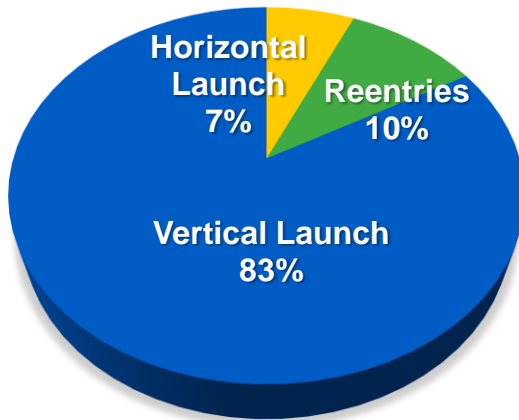
Today 64 percent of FAA licensed spaceports are for horizontal launch. However, more than 90 percent of the past three years' launches were vertical ([Figure 3](#)).

Figure 3. Spaceport Statistics – FAA Licensed Launches and Reentries

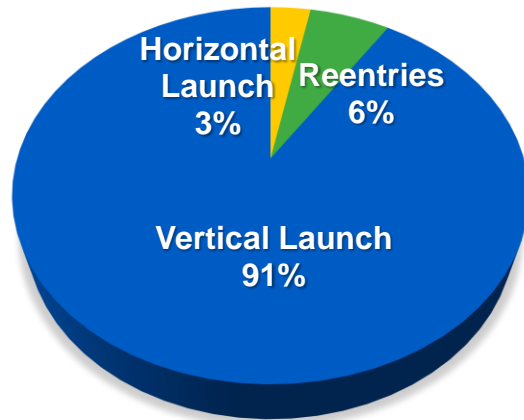
Fiscal Year	Total Launches	Reentries	Total Licensed Operations*	Horizontal Launch	Vertical Launch
2019	27	3	30	2	25
2020	31	2	33	1	30
2021	59	5	64	6	53
2022	69	5	74	2	67

* Does not include Permitted Launches in 2019

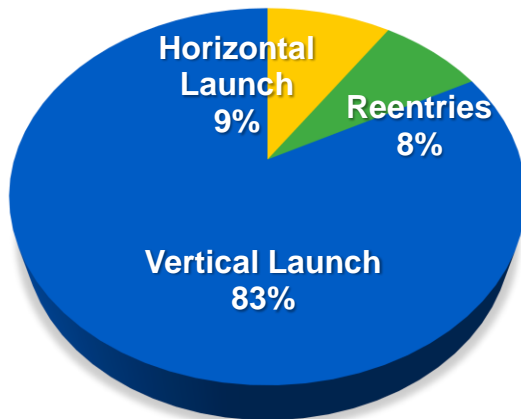
FY 2019 Percentages



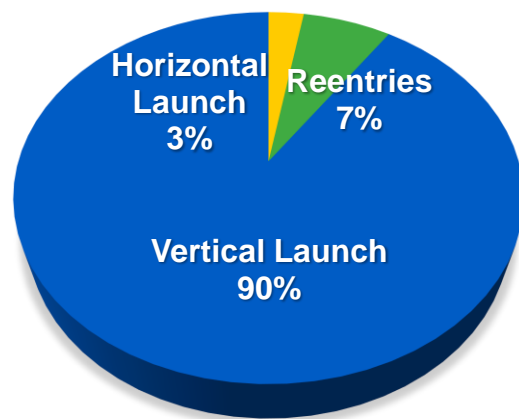
FY 2020 Percentages



FY 2021 Percentages



FY 2022 Percentages



More than half of FAA licensed commercial operations occur from U.S. Federal launch ranges² – even greater if licensed launches from international launch sites are excluded. International launches by U.S. companies (which require an FAA license) have been 11-22% of the total licensed activity historically, and are expected to increase. This high percentage of commercial launch activity from Federal ranges can be attributed to the significantly limited number of off-Federal range vertical launch sites, and existing government infrastructure and services available for commercial use on Federal range launch sites at “direct cost” per Title 51 section 50913.

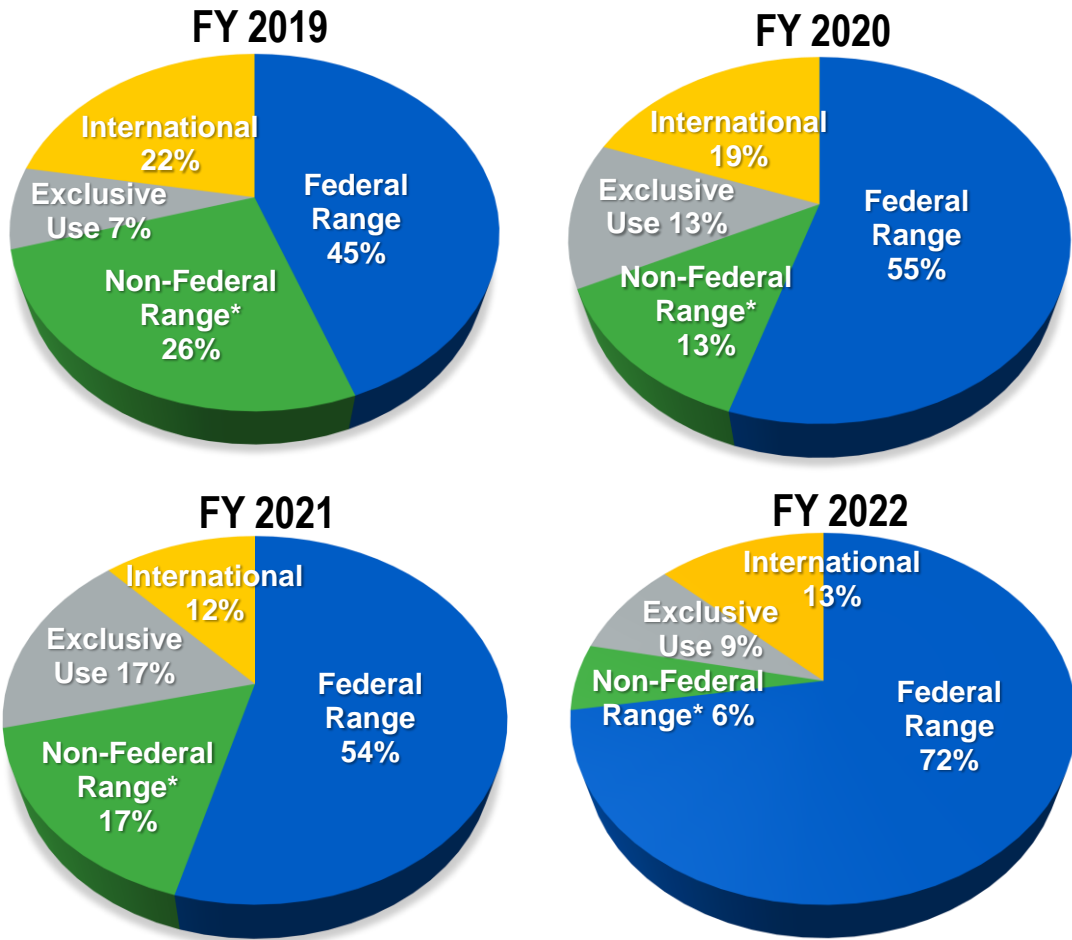
² Includes exclusive use and FAA licensed spaceports that are located on Federal range property.

Figure 4. Spaceport Statistics – Locations of Operations for FAA Licensed Launches

Fiscal Year	Total Launches	Federal Range	Non-Federal Range*	Exclusive Use	International
2019	27	12 (45%) **57% of U.S.	7 (26%) **33% of U.S.	2 (7%)	6 (22%)
2020	31	17 (55%) **68% of U.S.	4 (13%) **16% of U.S.	4 (13%)	6 (19%)
2021	59	32 (54%) **62% of U.S.	10 (17%) **19% of U.S.	10 (17%)	7 (12%)
2022	69	50 (72%) **83% of U.S.	4 (6%) **7% of U.S.	6 (9%) **10% of U.S.	9 (13%)

*Non-Federal ranges includes Licensed Spaceports and Exclusive Use sites not on Federal ranges.

**Percentage “in US” excludes licensed international launches



4.

Office of Commercial Space Transportation

In 2018, the last FAA Reauthorization directed that the FAA create an Office of Spaceports. The FAA did so on December 18, 2018. The Office is responsible for the following:

- Supporting licensing activities for U.S. launch and reentry sites;
- Promoting infrastructure improvements at U.S. spaceports;
- Providing technical assistance and guidance to U.S. spaceports;
- Promoting U.S. spaceports within the Department;
- Strengthening the Nation’s competitiveness in commercial space transportation infrastructure; and
- Increasing resilience for the Federal Government and commercial customers.

Since the FAA established the Office, there have been several accomplishments to highlight, including:

- Establishment of National Spaceport Interagency Working Group to maximize utilization of domestic spaceports and develop a national spaceport strategy;

- Execution of Spaceport Security Reviews with a number of interagency partners (including but not limited to the Federal Bureau of Investigation, Department of Homeland Security - Cybersecurity and Infrastructure Security Agency and the U.S. Secret Service) to help develop a picture of the threats to and vulnerabilities at FAA-licensed spaceports;
- Signing of the FAA/Brazil Space Agency Declaration of Intent outlining our international partnership committed to reducing duplication of reviews and approvals for licensing of U.S. launch activities from Brazil; and
- Signing of the Department of Transportation/United Kingdom (UK) Department for Transport Declaration of Intent outlining our international partnership committed to reducing duplication of reviews and approvals for licensing of U.S. launch activities from the United Kingdom.

5. International Spaceport Development and Investment

Today, the U.S. is the international leader in spaceport development and operations. Countries are continually investing in upgrades to their spaceports to support existing and new launch vehicles for both government and commercial activity. Currently only Russia, a combined Europe, Japan, China, India, Israel, Iran, South Korea, North Korea, and New Zealand can independently launch a satellite into orbit. Many of the spaceports in these countries are operated by their respective governments, similar to U.S. Federal ranges. About half of these countries are active in the commercial launch services market.

Countries like Russia, China, and India are rapidly developing new sites to accommodate the expanding activity. A number of other countries are also looking to enter the commercial spaceport market including but not limited to Brazil, the UK, Japan, Canada, Sweden, and Australia.

With the increase globally in the satellite market, there is a corresponding increase in the development of new, global launch vehicles and an opportunity for countries to attract new commercial launch business by upgrading or developing entirely new spaceports. Additionally, the development of horizontal launch systems has encouraged many countries to look at utilizing existing aviation infrastructure for commercial space launch opportunities.

In a number of countries, new legislation and regulations are in development to host commercial operations. While some countries are investing in new infrastructure and regulations to respond to new domestic launch vehicles (both orbital and suborbital), a number of them also hope to attract U.S. and international small launch providers. Others also hope to attract suborbital human space flight operators.

Due to increasing global commercial space market opportunities, many U.S. launch vehicle operators are planning international launches in the coming years.

As a result of the growing demand in the commercial space industry, new spaceports are in development in countries such as the UK, Brazil, Japan, Sweden, Norway, Spain, Italy, Portugal, Canada, United Arab Emirates, and Australia. A few countries, such as the UK, Japan, and Australia, are developing multiple sites for different vehicle operations or market opportunities.

A number of governments have also made large scale investments in spaceport infrastructure development and improvement projects through grants, loans and other mechanisms. The UK is one of the most prominent examples of this, with tens of millions of pounds in the forms of grants having been committed to support the development of commercial spaceports in the country³. Both domestic and international companies have been the recipients of these awards, including two U.S. operators.⁴ Another notable investment in spaceport infrastructure is the \$32M Australian Dollars the Australian Space Agency committed in March 2022 to the development of three domestic spaceports⁵.

6. Infrastructure Investment

The Federal Government, especially the Department of Defense and NASA, invests significantly in maintaining their respective ranges, such as Cape Canaveral Space Force Station, Vandenberg Space Force Station, and Kennedy Space Center.

DOT, however, does not currently invest in creating or maintaining commercial spaceport infrastructure. The DOT received authority for the Space Transportation Infrastructure Matching grant program in 1994. It was established for the purpose of ensuring resiliency of the commercial space transportation infrastructure in the United States. Congress provided a dedicated line-item appropriation of \$500,000 in FY10. Without additional appropriations, the FAA made available \$500,000 in FY11 and \$500,000 in FY12. These amounts were matched 1:1 by State and local governments and industry.

7. Conclusion

This report provides an overview of the types of spaceports that exist, the launch and reentry statistics for commercial space transportation operations, an overview of international efforts, and the history of Federal Government investment in spaceports..

Currently, most operations are vertical launches with a majority of these launches occurring at federal ranges. FAA-licensed spaceports currently play a limited role in commercial space transportation infrastructure. The FAA will continue to monitor the ever-changing market.

Appendix A. List of U.S. Spaceports and Exclusive-Use Sites

NOTE: Runways at CCSFS, Kwajalein, VAFB, and WFF have been used for Pegasus launches, but since the site is operated by an entity different from the launch licensee, the

³ Boyle, Alan. "Lockheed Martin Wins \$31M from UK Space Agency for Spaceport in Scotland." *GeekWire*, 16 July 2018, <https://www.geekwire.com/2018/lockheed-martin-31m-scotland-spaceport/>.

⁴ Foust, Jeff. "U.K. Government to Fund Spaceport Improvements for Virgin Orbit." *SpaceNews*, 6 Nov. 2019, <https://spacenews.com/u-k-government-to-fund-spaceport-improvements-for-virgin-orbit/>.

⁵ Chapman, Vanessa. "Australian Space Sector Receives Massive Funding Boost." *Space Australia*, 1 Mar. 2022, <https://spaceaustralia.com/news/australian-space-sector-receives-massive-funding-boost>.

runways do not conform to the definition of “spaceport” used in this report.

ABBREVIATIONS (not including U.S. state abbreviations)

- AAC = Alaska Aerospace Corporation
- CCSFS = Cape Canaveral Space Force Station
- DOT = Department of Transportation
- E = East
- EKAD = East Kern Airport District
- Ex-Use = Exclusive Use
- HAS = Houston Airport System
- Horiz = Horizontal launch
- JAA = Jacksonville Aviation Authority
- KSC = Kennedy Space Center
- LM = Lockheed Martin
- Loc = Location
- LSOL = Launch Site Operators License
- MIA = Midland International Airport
- NASA = National Aeronautics and Space Administration
- NMSA = New Mexico Spaceport America
- OSIDA = Oklahoma Space Industry Development Authority
- SLC = Space Launch Complex
- SLF = Shuttle Landing Facility
- TCAA = Titusville-Cocoa Airport Authority
- ULA = United Launch Alliance (includes Boeing and Lockheed Martin)
- USAF = United States Air Force
- VSBF = Vandenberg Space Force Base
- VCSFA = Virginia Commercial Space Flight Authority
- Vert = Vertical launch.
- W = West

FAA-Licensed Launch Sites

SPACEPORTS (as per the Congressional and DOT definitions)	Loc	Vert, Horiz	Site Type	Operated by
Cape Canaveral Spaceport (SLF)¹	FL	Horiz	LSOL	Space Florida
Cecil Field Spaceport²	FL	Horiz	LSOL	JAA
Colorado Air and Space Port²	CO	Horiz	LSOL	Adams County
Houston Spaceport²	TX	Horiz	LSOL	HAS
Wallops Flight Facility / Mid-Atlantic Regional Spaceport¹	VA	Vert	LSOL	VCSFA
Midland Int'l Air & Space Port²	TX	Horiz	LSOL	MIA
Mojave Air and Space Port²	CA	Horiz	LSOL	EKAD
Oklahoma Spaceport²	OK	Horiz	LSOL	OSIDA
Pacific Spaceport Complex – Alaska	AK	Vert	LSOL	AAC
Space Coast Regional Airport²	FL	Horiz	LSOL	TCAA
Spaceport America	NM	Vert/Horiz	LSOL	NMSA
CCSFS SLC-46¹	FL	Vert	LSOL	Space Florida

Spaceport Camden	GA	Vert	LSOL	Camden County
Huntsville International Air and Spaceport	AL	Horiz	LSOL	Huntsville Airport Authority

¹Denotes co-location on a Federal range.

²Denotes co-location on a National Plan of Integrated Airport Systems airport.

Launch Sites w/o a LSOL (Exclusive Use)

SPACEPORTS (as per the Congressional and DOT definitions)	Loc	Vert, Horiz	Site Type	Operated by
Mahia, New Zealand	NZ	Vert	Ex-Use	Rocket Lab
Rocket Development and Test Facility (MacGregor)	TX	Vert	Ex-Use	SpaceX
South Texas Launch Site (Boca Chica)	TX	Vert	Ex-Use	SpaceX
Launch Site One (Van Horn)	TX	Vert	Ex-Use	Blue Origin

NASA Kennedy Space Center (Federal Launch Site)

Launch Sites	Loc	Vert, Horiz	Site Type	Operated by
NASA KSC-Pad 39A¹	FL	Vert	Ex-Use	SpaceX
NASA KSC-Pad 39B	FL	Vert	Federal Site	NASA

¹Denotes co-location on a federal range.

NASA Goddard Space Flight Center/Wallops Flight Facility (Federal Range and Spaceport location)

Launch Sites	Loc	Vert, Horiz	Site Type	Operated by
Wallops Flight Facility	VA	Vert	Federal Site	NASA

Cape Canaveral Space Force Station (Federal Range)

Launch Sites	Loc	Vert, Horiz	Site Type	Operated by
CCSFS SLC-36¹ (In development)	FL	Vert	Ex-Use	Blue Origin
CCSFS SLC 16 (In development)	FL	Vert	Ex-Use	Relativity Space
CCSFS SLC-20 (In development)	FL	Vert	Ex-Use	Firefly
CCSFS SLC-37	FL	Vert	Ex-Use	ULA/Boeing
CCSFS SLC-40¹	FL	Vert	Ex-Use	SpaceX
CCSFS SLC-41¹	FL	Vert	Ex-Use	ULA/LM

¹Denotes co-location on a Federal range.

Vandenberg Space Force Base (Federal Range)

Launch Sites	Loc	Vert, Horiz	Site Type	Operated by
VSFB SLC-2W (end operations - transferred to commercial use)	CA	Vert	Federal Site	USAF/Boeing
VSFB SLC-2W	CA	Vert	Ex-Use	Firefly
VSFB SLC-3E ¹	CA	Vert	Ex-Use	ULA/LM
VSFB SLC-4E & 4W ¹	CA	Vert	Ex-Use	SpaceX
VSFB SLC-6	CA	Vert	Federal Site	ULA/Boeing
VSFB SLC-8	CA	Vert	Mix	Northrop Grumman
VSFB SLC-576E ¹	CA	Vert	Ex-Use	Northrop Grumman

¹Denotes co-location on a Federal range.

U.S. Army Garrison Kwajalein Atoll/ Ronald Reagan Ballistic Missile Test Site

Launch Sites	Loc	Vert, Horiz	Site Type	Operated by
U.S. Army Garrison Kwajalein Atoll/ Ronald Reagan Ballistic Missile Test Site	Marshall Islands	Horiz	Federal Site	Northrop Grumman